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ABSTRACT

The Wisconsin Nutrition Education and Training Program (NET) developed a test that would provide an adequate measure of the effect of the Wisconsin NET program on student knowledge. The teacher knowledge test was developed and used for baseline collection data. The student knowledge test was developed from the same general behavioral objectives as the teachers' test but modified to a level suitable for sixth grade students. The test was also used with a sample of tenth grade students to provide an estimate of knowledge gain and attitude changes which occur during the sixth to tenth grade period. Results indicated that although both males and females at the tenth grade scored higher than those at the sixth grade level, tenth grade females gained more over this period than did their male classmates. Tenth grade females tended to be more certain of their nutrition knowledge than males. Student opinions, as well as knowledge, were sampled. Analyses of variance were computed for test results. All statistical data on test results was noted in itemized tables. (DWH)

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NUTRITION RELATED KNOWLEDGE AND OPINIONS OF WISCONSIN SIXTH AND TENTH GRADE STUDENTS

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Wisconsin Department of Public Instruction

Herbert J. Grover, State Superintendent

NUTRITION RELATED KNOWLEDGE AND OPINIONS OF WISCONSIN SIXTH AND TENTH GRADE STUDENTS

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Introduction

The Nutrition Education and Training Program (NET) was created at the national level in 1977 by P.L. 95-166, and began in Wisconsin in July, 1978 with the receipt by the Wisconsin Department of Public Instruction (DPI) of advance planning funds. One of the major goals of the NET program was to instruct students with regard to the nutritional value of foods and the relationship between food and human health. The ultimate Wisconsin NET program goal was "to assist in providing students with adequate information and in promoting proper attitudes so that they can make informed choices about the foods they eat." An examination of nutrition knowledge tests available in 1978 convinced the Wisconsin NET program staff that none adequately reflected the "informed food choice" model, and that such a test would have to be developed in order to have an adequate measure of the effect of the Wisconsin NET program on student knowledge.

This report briefly describes the development of such a test and the results of baseline data collected with it. Due to the dramatic reduction in 1981 of funds available for continuation of the NET program, no further development of this knowledge test is envisioned, so this report is both a status report and a final report.

Nutrition Knowledge Test Development

During 1979-1980 a goal analysis was performed to answer the question, "What would we want an individual to be able to do or say in order to

demonstrate to our satisfaction that he or she could make informed food choices?" A list of general behavioral objectives was generated in answer to this question. This list was modified and refined through review by the Wisconsin NET staff and the University of Wisconsin nutritional sciences staff associated with the Wisconsin NET program, and eventually became the basis of the student knowledge test and a teacher knowledge test. The teacher knowledge test was developed and used for baseline data collection in the spring of 1980. Details regarding the general behavioral objectives and their translation into performance objectives testable with a multiple choice format are in the report A Survey of Nutrition Knowledge and Opinions of Wisconsin Elementary Teachers and Food Service Managers, available from the Wisconsin DPI.

The student knowledge test was developed from the same general behavioral objectives on which was based the teacher knowledge test, except that some were modified to reflect expectations deemed suitable to sixth grade students. Primary responsibility for the test development rested with Susan Nitzke, of the Nutritional Sciences Department of UW-Madison/ Extension. Preliminary versions of the test items were pilot tested and necessary revisions made. The final version of 40 items was intended to provide baseline information to be used for comparison purposes later. Opinion items regarding various nutrition-related issues were also developed for use with the statewide survey.

Survey Design and Implementation

Although the knowledge test was designed for use with sixth grade students, the test was also used with a sample of tenth graders, to provide an estimate of knowledge gain and attitude changes which occur during the sixth to tenth grade period. The sampling, survey distribution, and follow-up of nonrespondents were all performed by the Wisconsin Survey Research Laboratory of the UW-Madison/Extension. The directions for administration and coding of background information are in Appendices A and B. The knowledge test section is shown in Appendix C. The opinion items used for the two grade levels are shown in Appendices E and F. An answer key (Appendix D) was mailed to the respondents once the completed answer sheets for their classes were received.

Separate procedures were used to obtain the sixth and tenth grade samples. Twenty-three districts with elementary schools were identified using a probability-proportional-to-size selection method. Within each identified district (with the exception of Milwaukee, in which 5 were selected), one classroom was randomly selected. The principal of the school containing the selected classroom was contacted and his/her cooperation regarding participation secured. Survey materials were distributed and returned through each of the 27 principals.

For the tenth grade sample, twenty-four districts with high schools were identified using a probability-proportional-to-size selection procedure. For those districts with more than one high school (with

the exception of Milwaukee, in which four were selected), one school was selected at random. The principal of each of the 27 identified high schools was contacted and his/her cooperation regarding participation secured. After discussions with each principal regarding their school's schedule and class organization, a classroom with a representative cross-section of tenth grade students was randomly selected. (Most often, this was a homeroom or a tenth grade English class.)

Survey forms including directions, optical-scan answer sheets and a return-addressed, postage-paid envelope were distributed to the principals in early April by the Wisconsin Survey Research Laboratory. After suitable followups, the response rates were as follows:

	Sixth Grade	Tenth Grade
Number of Classrooms Selected	27	27
Number of Classrooms Returning Materials	18	15
Number of Usable Student Answer Sheets	460	432

As can be seen from the above table, the response rate was 67 percent for sixth-grade classrooms and 56 percent for tenth-grade classrooms.

Characteristics of the Sample

The genders of the students in the two samples were as follows:

	Sixth Grade	Tenth Grade
Male	208	201
Female	250	230
Not Ascertained	2	1

Students at both grade levels were asked how much instruction about physical health and the human body they had received.

The results were as follows:

AMOUNT OF INSTRUCTION ABOUT PHYSICAL HEALTH AND THE HUMAN BODY	SIXTH GRADE STUDENTS		
	Male	Female	Combined
None this year or previous years	22	11	33
None this year, SOME in previous years	21	27	48
Some this year, NONE in previous years	10	7	17
Some BOTH this year and in previous years	155	204	359
Not ascertained	--	--	3
Total	208	249	460

AMOUNT OF INSTRUCTION ABOUT PHYSICAL HEALTH AND THE HUMAN BODY	TENTH GRADE STUDENTS		
	Male	Female	Combined
None this year or previous years	9	3	12
None this year, SOME in previous years	64	64	128
Some this year, NONE in previous years	9	6	15
Some BOTH this year and in previous years	117	153	270
Not ascertained	--	--	7
Total	199	226	432

Students were asked how much instruction about foods and how the body uses foods they had received. The results were as follows:

AMOUNT OF INSTRUCTION ABOUT FOODS AND HOW THE BODY USES FOODS	SIXTH GRADE STUDENTS		
	Male	Female	Combined
None this year or previous years	11	10	21
None this year, SOME in previous years	73	100	173
Some this year, NONE in previous years	6	5	11
Some BOTH this year and in previous years	118	134	252
Not ascertained	--	--	3
Total	208	249	460

AMOUNT OF INSTRUCTION ABOUT FOODS AND HOW THE BODY USES FOODS	TENTH GRADE STUDENTS		
	Male	Female	Combined
None this year or previous years	11	7	18
None this year, SOME in previous years	59	88	147
Some this year, NONE in previous years	37	26	63
Some BOTH this year and in previous years	92	105	197
Not ascertained	--	--	7
Total	199	226	432

Students were asked if they had attended a home economics course which included instruction about foods and nutrition. The results were as follows:

NUMBER OF HOME ECON. COURSES (WHICH INCLUDED NUTRITION) TAKEN	SIXTH GRADE STUDENTS		
	Male	Female	Combined
None	194	234	428
None this year, one or more in previous years	1	5	6
One or more this year, none in previous years	5	0	5
One or more this year and in previous years	7	8	15
Not ascertained	--	--	6
Total	207	247	460

NUMBER OF HOME ECON. COURSES (WHICH INCLUDED NUTRITION) TAKEN	TENTH GRADE STUDENTS		
	Male	Female	Combined
None	90	42	132
None this year, one or more in previous years	90	137	227
One or more this year, none in previous years	6	8	14
One or more this year and in previous years	12	39	51
Not ascertained	—	—	8
Total	198	226	432

Findings Regarding Knowledge

The knowledge test (shown in Appendix C) consisted of 40 items based on general behavioral objectives reflecting what it was that a sixth grader should be able to do or say in order to demonstrate that he or she could make informed food choices. The same items were used at both the sixth and tenth grade levels, so that changes in overall scores and changes on individual items could be examined. Score distributions for the sixth and tenth grade students are displayed in Table 1. On the average, tenth grade students scored 5.4 points higher. A breakdown of knowledge scores by gender across the two grade levels (presented below) indicated that although both males and females at the tenth grade scored higher than those at the sixth grade, tenth grade females gained more over this period than did tenth grade males. The difference due to sex is not significant at the sixth grade level, but is significant beyond the 0.001 level at the tenth grade.

	SIXTH GRADE	TENTH GRADE
MALES		
Average ($\bar{X}$)	22.2	26.5
Std. Deviation	5.85	7.18
No.	208	201
FEMALES		
Average ($\bar{X}$)	23.2	29.6
Std. Deviation	5.97	5.77
No.	250	230

TABLE 1

DISTRIBUTION OF NUTRITION KNOWLEDGE SCORES
FOR SIXTH AND TENTH GRADE STUDENTS

SCORE	SIXTH GRADE	TENTH GRADE
39	0	1
38	0	10
37	0	4
36	1	15
35	2	22
34	6	26
33	6	39
32	7	27
31	15	31
30	18	39
29	23	29
28	21	31
27	29	15
26	31	19
25	40	17
24	29	4
23	31	14
22	20	9
21	28	12
20	22	10
19	16	6
18	26	2
17	21	5
16	10	1
15	14	5
14	10	7
13	10	4
12	5	2
11	8	7
10	0	2
9	4	6
8	3	0
7	1	1
6	0	0
5	1	0
4	2	0
Number	460	432
Average	22.7	28.1
Median	23.4	29.7
Std. Deviation	5.93	6.67
Reliability (KR-20)	0.78	0.86

Item difficulty and discrimination indices were calculated as part of a standard examination of the psychometric characteristics of the test. The details of this analysis are presented in Appendix G. A summary display of the percent of students at each grade level correctly answering each item (the difficulty index) is presented in Table 2. The greatest change was an increase by 36 percent for item 11, which dealt with the definition of a Calorie. A loss of 5 percent was found for item 12, which asked, "Which has the most Calories?" The correct choice, "an ounce of margarine", was selected by 17 percent of the tenth graders, as compared to 22 percent of the sixth graders. At both grade levels a majority of the students thought that "an ounce of sugar" had the most Calories, and more of the tenth than the sixth graders believed that the most Calories were in "an ounce of starch." This item was retained in the test even though its psychometric qualities are undesirable, because it tests an important concept and the student responses indicate a clear misconception on their part.

Overall, the data on Table 2 indicate that the typical gain from the sixth to the tenth grade (as measured by the median percentage difference) is an increase by 14 percent of the students correctly answering a test question. Half of the test items showed gains of between 7 to 18 percent.

Findings Regarding Nutrition Related Opinions or Topics

Six statements regarding various nutrition related topics were responded to by by sixth and tenth grade students. Tenth grade students also responded to an additional four items regarding topics more relevant to their age level.

TABLE 2

PERCENT OF SIXTH AND TENTH GRADE STUDENTS
CORRECTLY ANSWERING EACH NUTRITION KNOWLEDGE ITEM

ITEM	GRADE LEVEL SIXTH	TENTH	DIFFERENCE	ITEM	GRADE LEVEL SIXTH	TENTH	DIFFERENCE
1	63%	63%	0%	21	74%	87%	13%
2	49	73	24	22	79	84	5
3	77	79	2	23	80	87	7
4	69	89	20	24	85	90	5
5	77	89	12	25	67	83	16
6	51	68	17	26	42	56	14
7	64	83	19	27	43	66	23
8	56	59	3	28	20	38	18
9	39	56	17	29	66	80	14
10	53	59	6	30	66	87	21
11	39	75	36	31	83	88	5
12	22	17	- 5	32	29	49	20
13	35	59	24	33	46	62	16
14	66	84	18	34	48	54	6
15	67	75	8	35	51	74	23
16	77	88	11	36	77	85	8
17	13	30	17	37	32	41	9
18	51	68	17	38	52	77	25
19	59	77	18	39	70	83	13
20	74	76	2	40	61	73	12

Item wording and complete item statistics are in Appendix G.

The first statement was as follows:

"I do not know enough about nutrition to choose foods wisely."

RESPONSE	SIXTH GRADE	TENTH GRADE
Strongly agree	7%	5%
Agree	19	16
Neutral	34	34
Disagree	26	34
Strongly disagree	12	10
Not ascertained	1	a
Total	99%	100%
Number	(460)	(432)

a = less than ½%
Percentages may not total 100% due to rounding.

The percentages of students agreeing or disagreeing with this statement are similar across the two grade levels. At the sixth grade, no important differences were found between the responses of males and females. At the tenth grade level 48 percent of the females as compared to 40 percent of the males disagreed with this statement. (A chi-square analysis of the frequencies yielded a value of 9.42, which could occur by chance alone less than one time in eighteen.) This indicated that tenth grade females tended to be more certain of their nutrition knowledge than males.

The next opinion statement ascertained the breakfast eating habits of the students.

"I usually eat breakfast: . . ."

RESPONSE	SIXTH GRADE	TENTH GRADE
Less than once a week	6%	14%
Once or twice a week	8	17
Three or four times a week	11	15
Five or six times a week	9	12
Every Day	65	41
Not ascertained	1	a
Total	100%	100%
Number	(460)	(432)

a = less than ½%

When compared to sixth graders, far fewer tenth graders eat breakfast regularly (the difference is significant beyond the 0.001 level). No significant differences were found between males and females at the sixth grade, but more males than females at the tenth grade report eating breakfast frequently. The findings are presented below.

RESONSE TO "I USUALLY EAT BREAKFAST:"	TENTH GRADE MALES	TENTH GRADE FEMALES
Less than once a week	6%	20%
Once or twice a week	12	22
Three or four times a week	20	11
Five or six times a week	15	10
Every day	47	37
Total	100%	99%
(Not ascertained: 3)		
Number	(199)	(230)

Percentages may not total 100% due to rounding.

The differences between males and females in the above table are significant beyond the 0.001 level. Clearly, more females than males at the tenth grade tend to skip breakfast.

Student opinion regarding studying nutrition was ascertained with the following statement.

"Studying the nutritional value of foods is a waste of time."

RESPONSE	SIXTH GRADE	TENTH GRADE
Strongly Agree	7%	4%
Agree	4	8
Neutral	16	21
Disagree	35	39
Strongly Disagree	36	27
Not ascertained	2	1
Total	100%	100%
Number	(460)	(432)

a = less than ½%

Sixty-six percent of the tenth graders, as compared to 71 percent of the sixth graders, disagreed with this statement, indicating a statistically significant (beyond the 0.01 level) tendency for tenth graders to be less positive about the value of studying nutrition. At both the sixth and tenth grade levels females were more positive about studying nutrition than males; at both grade levels, about twelve percent more females disagreed with the statement.

Thoughtful choices of one's food are basic to good nutrition, and student attitudes regarding this were assessed with the following statement.

"If I am careful about what I eat, I will probably be healthier."

RESPONSE	SIXTH GRADE	TENTH GRADE
Strongly Agree	51%	42%
Agree	31	41
Neutral	10	10
Disagree	4	4
Strongly Disagree	2	2
Not ascertained	2	a
Total	100%	100%
Number	(460)	(432)

a = less than ½%

Although an equal (and gratifyingly large) proportion of students at both levels responded positively to this statement, sixth graders showed stronger agreement than did tenth graders. The pattern of responses for sixth grade males and females was nearly identical, but at the tenth grade females agreed more often than males with this statement. Eighty-seven percent of the females responded positively in comparison to 78 percent for the males; this difference is statistically significant beyond the 0.01 level.

Another aspect of choices regarding food was provided by this item.

"If an apple and a candy bar cost the same, I'd usually buy the apple."

RESPONSE	SIXTH GRADE	TENTH GRADE
Strongly Agree	17%	12%
Agree	20	17
Neutral	26	31
Disagree	20	29
Strongly Disagree	15	10
Not ascertained	2	1
Total	100%	100%
Number	(460)	(432)

Thirty-seven percent of the sixth graders, as compared to 29 percent of the tenth graders, agreed with this item. (This difference is statistically significantly beyond the 0.01 level.) The pattern of responses for tenth grade males and females was very similar; however, about 7 percent more sixth grade females than males agreed with the statement.

Student satisfaction with their present weight was determined with the following statement.

"I would like to weigh: . . ."

RESPONSE	SIXTH GRADE	TENTH GRADE
A lot more than I weigh now	3%	7%
A few pounds more than I weigh now	17	18
About what I weigh now	24	18
A few pounds less than I weigh now	36	41
A lot less than I weigh now	18	16
Not ascertained	2	a
Total	100%	100%
Number	(460)	(432)

a = less than ½%

In comparison to sixth graders, more tenth grade students are dissatisfied with their present weight. Both the percentage of tenth graders wanting to weigh more and the percentage of tenth graders wanting to weigh less increased when compared to the sixth graders. These differences are statistically significant beyond the 0.01 level.

At both grade levels, student satisfaction (or dissatisfaction) with their present weight depended on their sex.

RESPONSE TO STATEMENT "I WOULD LIKE TO WEIGH:"	SIXTH GRADE Males	Females
A lot more than I weigh now	5%	2%
A few pounds more than I weigh now	25	12
About what I weigh now	29	20
A few pounds less than I weigh now	29	43
A lot less than I weigh now	12	23
Total	100%	100%
(Not ascertained: 9)		
Number	(207)	(244)

RESPONSE TO STATEMENT "I WOULD LIKE TO WEIGH:"	TENTH GRADE Males	Females
A lot more than I weigh now	14%	1%
A few pounds more than I weigh now	34	5
About what I weigh now	25	11
A few pounds less than I weigh now	24	56
A lot less than I weigh now	3	27
Total	100%	100%
(Not ascertained: 9)		
Number	(199)	(230)

At both grade levels, a majority of the females would prefer to weigh less than their present weight, and this dissatisfaction is stronger at

the tenth grade level, in which 83 percent expressed such dissatisfaction. Differences between males and females are statistically significant beyond the 0.01 level at both grade levels.

The following opinion statements were presented only to the tenth graders, because the topics addressed were considered more relevant for students of their age. The first such issue was the use of diet pills, as presented by the following item.

"To lose weight, I'd take diet pills instead of following a diet plan."

RESPONSE	TENTH GRADE MALES	FEMALES	COMBINED
Strongly agree	3%	5%	4%
Agree	5	6	6
Neutral	23	20	21
Disagree	22	28	25
Strongly Disagree	47	41	43
Not ascertained	—	—	1
Total	100%	100%	100%
Number	(198)	(229)	(432)

Males' and females' responses to the above item did not differ significantly. It is encouraging to note that 68 percent of the respondents favored following a diet plan as a means of weight control, and that only ten percent preferred taking diet pills.

Student sensitivities to environmental issues regarding food production were assessed with the following item.

"I try to eat foods that require little energy or resources to produce."

RESPONSE	TENTH GRADE MALES	FEMALES	COMBINED
Strongly agree	6%	3%	4%
Agree	10	9	10
Neutral	56	56	55
Disagree	18	25	21
Strongly Disagree	10	7	9
Not ascertained	—	—	1
Total	100%	100%	100%
Number	(199)	(230)	(432)

Males and females did not differ significantly on the above item. A majority of the students were neutral on this issue. Of those expressing an opinion, a majority disagreed with the statement.

The next to last opinion item dealt with cooking foods in a manner which will retain the most nutrients.

"If I had to cook vegetables, I'd find out the best way to cook them to keep the vitamins."

RESPONSE	TENTH GRADE MALES	FEMALES	COMBINED
Strongly agree	18%	19%	18%
Agree	32	35	33
Neutral	42	34	38
Disagree	6	11	9
Strongly Disagree	2	1	2
Not ascertained	—	—	1
Total	100%	100%	100%
Number	(199)	(230)	(432)

Males and females did not differ significantly on this item. A scant majority of the students favored finding out the best way to retain nutrients when cooking vegetables, and a large percentage were neutral on this topic.

Another timely issue was addressed by the following item.

"A girl my age who's newly pregnant should choose her foods more to keep her figure than to nourish the baby."

RESPONSE	TENTH GRADE MALES	FEMALES	COMBINED
Strongly agree	9%	5%	7%
Agree	7	4	5
Neutral	8	3	6
Disagree	19	15	16
Strongly Disagree	57	72	65
Not ascertained	--	--	1
Total	100%	99%	100%
Number	(199)	(229)	(432)

Males and females differed significantly on this item, but a strong majority of both sexes favored nourishing the baby instead of attempting to retain one's figure.

Relationship of Knowledge Scores to Background Information

As mentioned earlier in this report, background information regarding the amount of health instruction, nutrition instruction and home economics courses was collected from each student during this survey. These

background variables were selected because it was believed they could be related to nutrition-related knowledge. Because it had been found that knowledge scores were significantly related to gender at the tenth grade, all of the tables showing the relationship between background and knowledge are tabulated separately by gender at both grade levels.

The first background variable examined is the reported amount of health instruction received, presented in Tables 3 and 4. At each grade level, a one-way analysis of variance (with gender ignored) indicated significant differences (beyond the 0.002 level) between groups of students reporting various amounts of health instruction. At both grade levels, students receiving health instruction both this year and previous years outscored other students.

Due to time constraints, statistical analyses to detect unique relationships between gender and various amounts of health education (such as an examination of gender by amount of instruction interaction in a two-way analysis of variance) were not performed. Generalizations about such interactions to the total statewide sixth and tenth grade populations would be hazardous, because of the small numbers in some of the cells.

Students were asked how much instruction "about foods and how the body uses foods" they had received. Tables 5 and 6 present the results by gender for the sixth and tenth graders respectively. One-way analyses of variance showed significant differences (beyond the 0.002 level) at both grade levels between groups reporting various amounts of nutrition

TABLE 3

SIXTH GRADE: AVERAGE KNOWLEDGE SCORES OF MALES AND FEMALES HAVING VARIOUS AMOUNTS OF HEALTH INSTRUCTION

AMOUNT OF INSTRUCTION ABOUT PHYSICAL HEALTH AND THE HUMAN BODY		MALES	FEMALES	COMBINED
None this year or previous yrs.	$\bar{X}$	18.2	20.2	18.8
	Std. Dev.	5.66	5.79	5.70
	No.	(22)	(11)	(33)
None this yr., SOME in prev. yrs.	$\bar{X}$	19.5	21.8	20.8
	Std. Dev.	5.11	5.83	5.58
	No.	(21)	(27)	(48)
Some this yr., NONE in prev. yrs.	$\bar{X}$	17.0	16.0	16.6
	Std. Dev.	6.68	4.76	5.82
	No.	(10)	(7)	(17)
Some BOTH this yr. & in prev. yrs.	$\bar{X}$	23.4	23.9	23.7
	Std. Dev.	5.40	5.73	5.59
	No.	(155)	(204)	(359)

Missing Cases: 3

TABLE 4

TENTH GRADE: AVERAGE KNOWLEDGE SCORES OF MALES AND FEMALES HAVING VARIOUS AMOUNTS OF HEALTH INSTRUCTION

AMOUNT OF INSTRUCTION ABOUT PHYSICAL HEALTH AND THE HUMAN BODY		MALES	FEMALES	COMBINED
None this year or previous yrs.	$\bar{X}$	26.7	20.3	25.1
	Std. Dev.	7.67	8.51	8.01
	No.	(9)	(3)	(12)
None this yr., SOME in prev. yrs.	$\bar{X}$	25.7	28.3	27.0
	Std. Dev.	7.34	5.49	6.59
	No.	(64)	(64)	(128)
Some this yr., NONE in prev. yrs.	$\bar{X}$	25.0	25.0	25.0
	Std. Dev.	6.91	8.83	7.43
	No.	(9)	(6)	(15)
Some BOTH this yr. & in prev. yrs.	$\bar{X}$	27.1	30.6	29.1
	Std. Dev.	7.13	5.38	6.43
	No.	(117)	(153)	(270)

Missing Cases: 7

TABLE 5

SIXTH GRADE: AVERAGE KNOWLEDGE SCORES OF MALES AND FEMALES HAVING VARIOUS AMOUNTS OF NUTRITION INSTRUCTION

AMOUNT OF INSTRUCTION ABOUT FOODS AND HOW THE BODY USES FOODS		MALES	FEMALES	COMBINED
None this year or previous yrs.	$\bar{X}$	14.5	14.6	14.5
	Std. Dev.	6.86	4.09	5.57
	No.	(11)	(10)	(21)
None this yr., SOME in prev. yrs.	$\bar{X}$	20.7	21.8	21.3
	Std. Dev.	5.34	5.36	5.36
	No.	(73)	(100)	(173)
Some this yr., NONE in prev. yrs.	$\bar{X}$	24.2	20.0	22.3
	Std. Dev.	3.31	7.14	5.53
	No.	(6)	(5)	(11)
Some BOTH this yr. & in prev. yrs.	$\bar{X}$	23.7	25.2	24.5
	Std. Dev.	5.38	5.44	5.46
	No.	(118)	(134)	(252)

Missing Cases: 3

TABLE 6

TENTH GRADE: AVERAGE KNOWLEDGE SCORES OF MALES AND FEMALES HAVING VARIOUS AMOUNTS OF NUTRITION INSTRUCTION

AMOUNT OF INSTRUCTION ABOUT FOODS AND HOW THE BODY USES FOODS		MALES	FEMALES	COMBINED
None this year or previous yrs.	$\bar{X}$	26.3	21.1	24.3
	Std. Dev.	8.13	6.39	7.74
	No.	(11)	(7)	(18)
None this yr., SOME in prev. yrs.	$\bar{X}$	25.7	28.9	27.6
	Std. Dev.	7.10	5.30	6.27
	No.	(59)	(88)	(147)
Some this yr., NONE in prev. yrs.	$\bar{X}$	26.4	27.9	27.0
	Std. Dev.	6.16	6.66	6.36
	No.	(37)	(26)	(63)
Some BOTH this yr. & in prev. yrs.	$\bar{X}$	27.1	31.3	29.3
	Std. Dev.	7.58	5.16	6.72
	No.	(92)	(105)	(197)

Missing Cases: 7

instruction. At the sixth grade level, students reporting such instruction both this year and in previous years scored about two points higher than other sixth graders. At the tenth grade, such students scored about one and one-half points higher. Those reporting having received no such instruction scored at least seven points lower in the sixth grade and about three points lower in the tenth grade. Such differences suggest that the knowledge test is measuring the kinds of information taught in such nutrition units.

The third background variable examined was attendance in a home economics course which included instruction about foods and nutrition. The average knowledge scores for sixth and tenth graders are presented in Tables 7 and 8. Due to the fact that very few of the sixth graders had taken such a course, no generalizations to the statewide population should be made. At the tenth grade level, the differences between groups with various exposures to home economics are significant at the 0.05 level, but these differences appear to be more because far fewer males than females had taken such courses, and males in general scored lower than females. The relationship between attendance in a home economics course including nutrition and knowledge scores for female tenth graders is not clear. When the eight students reporting taking one or more courses this year but none previously are eliminated from the analysis, there appears to be no significant relationship between attendance in such a course and knowledge scores.

TABLE 7

SIXTH GRADE: AVERAGE KNOWLEDGE SCORES OF MALES AND FEMALES HAVING VARIOUS AMOUNTS OF ATTENDANCE IN HOME ECONOMICS COURSES

NUMBER OF HOME ECON. COURSES INCLUDING NUTRITION) TAKEN		MALES	FEMALES	COMBINED
None	$\bar{X}$	22.4	23.6	23.1
	Std. Dev.	5.75	5.78	5.79
	No.	(194)	(234)	(428)
None this year, one or more in previous years	$\bar{X}$	19.0	20.8	20.5
	Std. Dev.	0	5.63	5.09
	No.	(1)	(5)	(6)
One or more this year, none in previous years	$\bar{X}$	15.8	---	15.8
	Std. Dev.	7.79	---	7.79
	No.	(5)	(0)	(5)
One ore more this year and in previous years	$\bar{X}$	19.0	17.1	18.0
	Std. Dev.	5.10	6.92	6.00
	No.	(7)	(8)	(15)

Missing Cases: 6

TABLE 8

TENTH GRADE: AVERAGE KNOWLEDGE SCORES OF MALES AND FEMALES HAVING VARIOUS AMOUNTS OF ATTENDANCE IN HOME ECONOMICS COURSES

NUMBER OF HOME ECON. COURSES INCLUDING NUTRITION) TAKEN		MALES	FEMALES	COMBINED
None	$\bar{X}$	26.4	29.0	27.2
	Std. Dev.	7.24	5.19	6.75
	No.	(90)	(42)	(132)
None this year, one or more in previous years	$\bar{X}$	26.6	30.0	28.7
	Std. Dev.	6.91	5.58	6.35
	No.	(90)	(137)	(227)
One or more this year, none in previous years	$\bar{X}$	22.5	26.8	24.9
	Std. Dev.	10.45	7.56	8.80
	No.	(6)	(8)	(14)
One or more this year and in previous years	$\bar{X}$	28.0	29.6	29.3
	Std. Dev.	7.53	6.56	6.76
	No.	(12)	(39)	(51)
Missing Cases: 8				

Relationship of Knowledge Scores to Opinions

Both sixth and tenth graders responded to opinion items, and the percentage of students responding in various ways were presented earlier in this report. Average knowledge scores were also calculated for each group responding in various ways to each item. Tables 9 through 20 present summary statistics for the opinion items responded to by both sixth and tenth graders, and Tables 21 through 24 present data for the opinion items to which only the tenth graders responded.

One way analyses of variance (ANOVA) were performed across response groups at each grade level (ignoring gender), and the determination as to whether or not there were significant differences in knowledge scores between students with various responses to the opinion items is noted below each table. No examinations of gender by response interaction were performed, due to time constraints. Further analyses of these data may be published later.

TABLE 9

SIXTH GRADE: AVERAGE KNOWLEDGE SCORES OF MALES AND FEMALES WITH VARIOUS RESPONSES TO THE STATEMENT "I DO NOT KNOW ENOUGH ABOUT NUTRITION TO CHOOSE FOODS WISELY"

RESPONSE		MALES	FEMALES	COMBINED
Strongly agree	$\bar{X}$	17.6	19.1	18.3
	Std. Dev.	5.61	5.27	5.41
	No.	(16)	(16)	(32)
Agree	$\bar{X}$	21.0	20.5	20.7
	Std. Dev.	6.04	5.68	5.79
	No.	(33)	(52)	(85)
Neutral	$\bar{X}$	22.7	24.5	23.6
	Std. Dev.	5.38	5.43	5.46
	No.	(77)	(81)	(158)
Disagree	$\bar{X}$	23.1	24.5	23.9
	Std. Dev.	5.12	5.90	5.60
	No.	(51)	(70)	(121)
Strongly disagree	$\bar{X}$	23.1	24.5	23.8
	Std. Dev.	6.82	6.40	6.60
	No.	(30)	(26)	(56)
Missing cases: 8				

A one-way ANOVA showed significant differences ($p < 0.001$) between response groups. Note that students who were neutral or disagreed with the item had higher average knowledge scores.

TABLE 10

TENTH GRADE: AVERAGE KNOWLEDGE SCORES OF MALES AND FEMALES WITH VARIOUS RESPONSES TO THE STATEMENT "I DO NOT KNOW ENOUGH ABOUT NUTRITION TO CHOOSE FOODS WISELY"

RESPONSE		MALES	FEMALES	COMBINED
Strongly agree	$\bar{X}$	19.0	18.8	18.9
	Std. Dev.	7.39	8.08	7.35
	No.	(16)	(5)	(21)
Agree	$\bar{X}$	23.5	26.4	25.1
	Std. Dev.	8.13	6.06	7.17
	No.	(31)	(37)	(68)
Neutral	$\bar{X}$	26.9	29.6	28.3
	Std. Dev.	6.15	4.29	5.43
	No.	(72)	(77)	(149)
Disagree	$\bar{X}$	29.0	31.1	30.2
	Std. Dev.	6.04	4.74	5.42
	No.	(63)	(85)	(148)
Strongly disagree	$\bar{X}$	28.8	31.3	30.3
	Std. Dev.	6.14	7.78	7.20
	No.	(17)	(26)	(43)
Missing cases: 3				

A one-way ANOVA showed significant ($p < 0.001$) differences across response groups. Note that students who agreed with the item had lower average scores than the other students.

TABLE 11

SIXTH GRADE: AVERAGE KNOWLEDGE SCORES OF MALES AND FEMALES WHO EAT BREAKFAST VARIOUS NUMBERS OF TIMES EACH WEEK

RESPONSE TO "I USUALLY EAT BREAKFAST:"		MALES	FEMALES	COMBINED
Less than once a week	$\bar{X}$	16.3	19.8	18.3
	Std. Dev.	6.57	6.31	6.55
	No.	(12)	(17)	(29)
Once or twice a week	$\bar{X}$	20.4	20.8	20.6
	Std. Dev.	7.06	6.04	6.33
	No.	(14)	(25)	(39)
Three or four times a week	$\bar{X}$	22.1	20.4	21.3
	Std. Dev.	5.41	6.26	5.85
	No.	(24)	(24)	(48)
Five or six times a week	$\bar{X}$	20.9	23.8	22.5
	Std. Dev.	7.44	6.00	6.76
	No.	(18)	(22)	(40)
Every day	$\bar{X}$	23.1	24.4	23.8
	Std. Dev.	5.13	5.56	5.40
	No.	(139)	(157)	(296)

Missing cases: 8

A one-way ANOVA showed significant ($p < 0.001$) positive relationship between regularity of eating breakfast and average knowledge scores.

TABLE 12

TENTH GRADE: AVERAGE KNOWLEDGE SCORES OF MALES AND FEMALES WHO EAT BREAKFAST VARIOUS NUMBERS OF TIMES EACH WEEK

RESPONSE TO "I USUALLY EAT BREAKFAST:"		MALES	FEMALES	COMBINED
Less than once a week	$\bar{X}$	21.4	28.4	26.9
	Std. Dev.	9.20	6.05	7.30
	No.	(12)	(46)	(58)
Once or twice a week	$\bar{X}$	24.0	28.3	26.9
	Std. Dev.	7.69	5.75	6.66
	No.	(23)	(51)	(74)
Three or four times a week	$\bar{X}$	23.0	28.4	25.1
	Std. Dev.	7.34	7.63	7.86
	No.	(40)	(26)	(66)
Five or six times a week	$\bar{X}$	27.0	27.8	27.3
	Std. Dev.	5.72	4.44	5.18
	No.	(30)	(22)	(52)
Every day	$\bar{X}$	29.2	31.9	30.5
	Std. Dev.	5.76	4.53	5.37
	No.	(94)	(85)	(179)

Missing cases: 3

A one-way ANOVA showed significant ($p < 0.001$) positive relationship between regularity of eating breakfast and average knowledge scores.

TABLE 13

SIXTH GRADE: AVERAGE KNOWLEDGE SCORES OF MALES AND FEMALES WITH VARIOUS RESPONSES TO THE STATEMENT "STUDYING THE NUTRITIONAL VALUE OF FOODS IS A WASTE OF TIME"

RESPONSE		MALES	FEMALES	COMBINED
Strongly agree	$\bar{X}$	18.1	19.3	18.5
	Std. Dev.	5.22	7.35	5.99
	No.	(19)	(11)	(30)
Agree	$\bar{X}$	19.5	17.1	18.2
	Std. Dev.	5.58	5.90	5.72
	No.	(8)	(10)	(18)
Neutral	$\bar{X}$	20.5	22.2	21.2
	Std. Dev.	6.46	5.87	6.24
	No.	(42)	(31)	(73)
Disagree	$\bar{X}$	23.7	23.4	23.5
	Std. Dev.	5.18	5.43	5.32
	No.	(65)	(98)	(163)
Strongly disagree	$\bar{X}$	23.2	24.6	24.0
	Std. Dev.	5.40	5.91	5.72
	No.	(73)	(94)	(167)

Missing cases: 9

A one-way ANOVA showed significant ($p < 0.001$) relationship between disagreement with the item and higher knowledge scores.

TABLE 14

TENTH GRADE: AVERAGE KNOWLEDGE SCORES OF MALES AND FEMALES WITH VARIOUS RESPONSES TO THE STATEMENT "STUDYING THE NUTRITIONAL VALUE OF FOODS IS A WASTE OF TIME"

RESPONSE		MALES	FEMALES	COMBINED
Strongly agree	$\bar{X}$	15.7	27.8	20.0
	Std. Dev.	7.82	2.71	8.73
	No.	(11)	(6)	(17)
Agree	$\bar{X}$	20.7	23.8	21.8
	Std. Dev.	6.99	7.94	7.38
	No.	(22)	(12)	(34)
Neutral	$\bar{X}$	25.9	29.0	27.4
	Std. Dev.	6.57	5.96	6.43
	No.	(46)	(45)	(91)
Disagree	$\bar{X}$	28.5	30.6	29.7
	Std. Dev.	5.99	5.24	5.67
	No.	(76)	(94)	(170)
Strongly disagree	$\bar{X}$	29.5	30.0	29.8
	Std. Dev.	4.83	5.24	5. 07
	No.	(44)	(72)	(116)

Missing cases: 4

A one-way ANOVA showed significant ($p < 0.001$) relationship between disagreement with this item and higher knowledge scores.

TABLE 15

SIXTH GRADE: AVERAGE KNOWLEDGE SCORES OF MALES AND FEMALES WITH VARIOUS RESPONSES TO THE STATEMENT "IF I AM CAREFUL ABOUT WHAT I EAT, I WILL PROBABLY BE HEALTHIER"

RESPONSE		MALES	FEMALES	COMBINED
Strongly agree	$\bar{X}$	22.6	24.0	23.4
	Std. Dev.	5.13	5.60	5.42
	No.	(106)	(128)	(234)
Agree	$\bar{X}$	23.4	23.5	23.5
	Std. Dev.	5.83	5.97	5.89
	No.	(62)	(79)	(141)
Neutral	$\bar{X}$	18.4	21.9	20.1
	Std. Dev.	6.32	6.84	6.74
	No.	(25)	(23)	(48)
Disagree	$\bar{X}$	19.0	19.0	19.0
	Std. Dev.	7.30	6.36	6.68
	No.	(10)	(9)	(19)
Strongly disagree	$\bar{X}$	24.0	17.0	20.1
	Std. Dev.	5.94	6.75	7.04
	No.	(4)	(5)	(9)

Missing cases: 9

A one-way ANOVA showed a significant ($p < 0.001$) positive relationship between agreement with this item and higher knowledge scores. The relationship is much more clear-cut for females than it is for males.

TABLE 16

TENTH GRADE: AVERAGE KNOWLEDGE SCORES OF MALES AND FEMALES WITH VARIOUS RESPONSES TO THE STATEMENT "IF I AM CAREFUL ABOUT WHAT I EAT, I WILL PROBABLY BE HEALTHIER"

RESPONSE		MALES	FEMALES	COMBINED
Strongly agree	$\bar{X}$	27.8	30.6	29.5
	Std. Dev.	5.80	4.99	5.47
	No.	(69)	(114)	(183)
Agree	$\bar{X}$	27.8	29.5	28.6
	Std. Dev.	6.93	5.40	6.25
	No.	(87)	(87)	(174)
Neutral	$\bar{X}$	25.0	24.6	24.8
	Std. Dev.	6.06	7.08	6.42
	No.	(26)	(18)	(44)
Disagree	$\bar{X}$	17.1	30.6	20.8
	Std. Dev.	7.70	3.65	9.15
	No.	(13)	(5)	(18)
Strongly disagree	$\bar{X}$	20.3	26.8	24.2
	Std. Dev.	10.56	12.37	11.56
	No.	(4)	(6)	(10)

Missing cases: 3

A one-way ANOVA showed a significant ($p<0.001$) positive relationship between agreement with this item and higher knowledge scores.

TABLE 17

SIXTH GRADE: AVERAGE KNOWLEDGE SCORES OF MALES AND FEMALES WITH VARIOUS RESPONSES TO THE STATEMENT "IF AN APPLE AND A CANDY BAR COST THE SAME, I'D USUALLY BUY THE APPLE"

RESPONSE		MALES	FEMALES	COMBINED
Strongly agree	$\bar{X}$	20.3	20.8	20.6
	Std. Dev.	5.85	5.47	5.64
	No.	(40)	(39)	(79)
Agree	$\bar{X}$	21.8	23.1	22.6
	Std. Dev.	6.46	6.59	6.54
	No.	(30)	(59)	(89)
Neutral	$\bar{X}$	24.1	24.7	24.5
	Std. Dev.	4.64	5.00	4.84
	No.	(49)	(71)	(120)
Disagree	$\bar{X}$	22.9	24.1	23.5
	Std. Dev.	5.53	6.25	5.88
	No.	(48)	(44)	(92)
Strongly disagree	$\bar{X}$	21.2	22.5	21.7
	Std. Dev.	6.35	6.47	6.39
	No.	(40)	(31)	(71)

Missing cases: 9

A one-way ANOVA showed significant ($p<0.001$) knowledge differences between students with various responses. Note that those with a neutral response had the highest average knowledge score.

TABLE 18

TENTH GRADE: AVERAGE KNOWLEDGE SCORES OF MALES AND FEMALES WITH VARIOUS RESPONSES TO THE STATEMENT "IF AN APPLE AND A CANDY BAR COST THE SAME, I'D USUALLY BUY THE APPLE"

RESPONSE		MALES	FEMALES	COMBINED
Strongly agree	$\bar{X}$	24.7	26.0	25.5
	Std. Dev.	7.34	8.04	7.72
	No.	(20)	(30)	(50)
Agree	$\bar{X}$	24.8	28.7	27.0
	Std. Dev.	8.58	5.94	7.43
	No.	(33)	(42)	(75)
Neutral	$\bar{X}$	26.7	30.4	28.8
	Std. Dev.	6.64	4.88	5.98
	No.	(59)	(76)	(135)
Disagree	$\bar{X}$	28.0	31.2	29.6
	Std. Dev.	6.41	4.46	5.70
	No.	(61)	(65)	(126)
Strongly disagree	$\bar{X}$	27.1	28. 6	27.7
	Std. Dev.	6.91	6.09	6.56
	No.	(25)	(17)	(42)

Missing cases: 4

A one-way ANOVA showed significant ($p < 0.001$) differences between response groups. Note that those who agreed with the item tended to have lower scores, but those who disagreed had the highest average scores, followed closely by those who were neutral.

TABLE 19

SIXTH GRADE: AVERAGE KNOWLEDGE SCORES OF MALES AND FEMALES WITH VARIOUS DEGREES OF SATISFACTION WITH THEIR PRESENT WEIGHT

RESPONSE TO STATEMENT "I WOULD LIKE TO WEIGH:"		MALES	FEMALES	COMBINED
A lot more than I weigh now	$\bar{X}$	15.6	16.0	15.7
	Std. Dev.	5.06	7.12	5.43
	No.	(10)	(4)	(14)
A few more pounds than I weigh now	$\bar{X}$	22.1	20.0	21.3
	Std. Dev.	5.43	6.49	5.89
	No.	(51)	(29)	(80)
About what I weigh now	$\bar{X}$	23.2	24.7	23.9
	Std. Dev.	5.31	5.92	5.62
	No.	(61)	(50)	(111)
A few pounds less than I weigh now	$\bar{X}$	23.3	24.2	23.9
	Std. Dev.	5.49	5.86	5.73
	No.	(60)	(105)	(165)
A lot less than I weigh now	$\bar{X}$	20.2	22.6	21.8
	Std. Dev.	6.91	5.03	5.73
	No.	(25)	(56)	(81)
Missing cases: 9				

A one-way ANOVA showed significant ($p < 0.001$) differences between students with various degrees of satisfaction with their weight. Note that those satisfied with their weight or desiring to weigh a few pounds less had the highest average knowledge scores.

TABLE 20

TENTH GRADE: AVERAGE KNOWLEDGE SCORES OF MALES AND FEMALES WITH VARIOUS DEGREES OF SATISFACTION WITH THEIR PRESENT WEIGHT

RESPONSE TO STATEMENT "I WOULD LIKE TO WEIGH:"		MALES	FEMALES	COMBINED
A lot more than I weigh now	$\bar{X}$	24.0	28.0	24.2
	Std. Dev.	7.65	4.24	7.50
	No.	(28)	(2)	(30)
A few more pounds than I weigh now	$\bar{X}$	26.7	27.7	26.9
	Std. Dev.	6.98	7.04	6.95
	No.	(68)	(12)	(80)
About what I weigh now	$\bar{X}$	26.5	28.5	27.2
	Std. Dev.	7.07	5.91	6.72
	No.	(49)	(26)	(75)
A few pounds less than I weigh now	$\bar{X}$	27.4	30.1	29.4
	Std. Dev.	7.04	5.35	5.96
	No.	(48)	(128)	(176)
A lot less than I weigh now	$\bar{X}$	30.5	29.5	29.6
	Std. Dev.	4.76	6.32	6.18
	No.	(6)	(62)	(68)

Missing cases: 3

A one-way ANOVA showed significant ($p < 0.001$) relationship between higher knowledge scores and wanting to weigh less. The relationship is nearly linear across response groups.

TABLE 21

AVERAGE KNOWLEDGE SCORES OF TENTH GRADE STUDENTS WITH VARIOUS RESPONSES TO THE STATEMENT "TO LOSE WEIGHT, I'D TAKE DIET PILLS INSTEAD OF FOLLOWING A DIET PLAN"

RESPONSE		MALES	FEMALES	COMBINED
Strongly agree	$\bar{X}$	25.5	20.8	22.3
	Std. Dev.	7.26	6.84	7.15
	No.	(6)	(12)	(18)
Agree	$\bar{X}$	20.8	26.4	24.1
	Std. Dev.	5.87	8.28	7.76
	No.	(10)	(14)	(24)
Neutral	$\bar{X}$	24.8	29.5	27.2
	Std. Dev.	7.88	5.43	7.14
	No.	(45)	(45)	(90)
Disagree	$\bar{X}$	26.9	29.9	28.7
	Std. Dev.	6.93	4.70	5.87
	No.	(44)	(64)	(108)
Strongly disagree	$\bar{X}$	27.8	31.0	29.4
	Std. Dev.	6.54	4.90	5.97
	No.	()93	(94)	(187)

Missing cases: 5

Students with higher knowledge scores tend to favor following a diet plan instead of taking diet pills. This relationship is much more pronounced for females than it is for males.

A one-way ANOVA showed a significant ($p<0.001$) linear relationship between disagreement with this item and higher knowledge scores.

TABLE 22

AVERAGE KNOWLEDGE SCORES OF TENTH GRADE STUDENTS WITH VARIOUS RESPONSES TO THE STATEMENT "I TRY TO EAT FOODS THAT REQUIRE LITTLE ENERGY OR RESOURCES TO PRODUCE"

RESPONSE		MALES	FEMALES	COMBINED
Strongly agree	$\bar{X}$	18.4	26.0	21.2
	Std. Dev.	8.38	9.24	9.25
	No.	(12)	(7)	(19)
Agree	$\bar{X}$	22.1	28.2	25.3
	Std. Dev.	7.83	6.15	7.57
	No.	(20)	(22)	(42)
Neutral	$\bar{X}$	27.4	30.0	28.8
	Std. Dev.	6.98	5.64	6.42
	No.	(111)	(128)	(239)
Disagree	$\bar{X}$	27.5	30.1	29.1
	Std. Dev.	4.97	4.58	4.87
	No.	(35)	(57)	(92)
Strongly disagree	$\bar{X}$	29.7	28.5	29.2
	Std. Dev.	4.21	7.78	5.98
	No.	(21)	(16)	(37)

Missing cases: 3

Students with higher knowledge scores tended NOT to favor eating foods requiring little energy or resources to produce. This relationship was much stronger for males than for females.

A one-way ANOVA showed a significant ($p < 0.001$) linear relationship between disagreement with this item and higher knowledge scores.

TABLE 23

AVERAGE KNOWLEDGE SCORES OF TENTH GRADE STUDENTS WITH VARIOUS RESPONSES TO THE STATEMENT "IF I HAD TO COOK VEGETABLES, I'D FIND OUT THE BEST WAY TO COOK THEM TO KEEP THE VITAMINS"

RESPONSE		MALES	FEMALES	COMBINED
Strongly agree	$\bar{X}$	24.2	29.3	27.0
	Std. Dev.	8.07	5.31	7.12
	No.	(35)	(43)	(78)
Agree	$\bar{X}$	26.8	29.5	28.3
	Std. Dev.	6.92	5.77	6.42
	No.	(64)	(80)	(144)
Neutral	$\bar{X}$	26.9	29.9	28.3
	Std. Dev.	7.06	6.03	6.73
	No.	(84)	(78)	(162)
Disagree	$\bar{X}$	28.8	29.1	29.0
	Std. Dev.	5.60	6.07	5.86
	No.	(11)	(26)	(37)
Strongly disagree	$\bar{X}$	29.0	33.7	30.8
	Std. Dev.	2.65	2.52	3.41
	No.	(5)	(3)	(8)

Missing cases: 3

A one-way ANOVA showed no significant relationship between various opinions regarding this item and average knowledge scores. (A test for a linear trend yielded an equivocal significance level of 0.07, judged to be not significant.)

TABLE 24

AVERAGE KNOWLEDGE SCORES OF TENTH GRADE STUDENTS WITH VARIOUS RESPONSES TO THE STATEMENT "A GIRL MY AGE WHO'S NEWLY PREGNANT SHOULD CHOOSE HER FOODS MORE TO KEEP HER FIGURE THAN TO NOURISH THE BABY"

RESPONSE		MALES	FEMALES	COMBINED
Strongly agree	$\bar{X}$	21.8	23.5	22.4
	Std. Dev.	8.58	8.20	8.33
	No.	(18)	(11)	(29)
Agree	$\bar{X}$	19.6	20.4	20.0
	Std. Dev.	8.16	6.64	7.38
	No.	(13)	(10)	(23)
Neutral	$\bar{X}$	24.9	29.0	26.2
	Std. Dev.	6.70	6.05	6.66
	No.	(17)	(8)	(25)
Disagree	$\bar{X}$	27.2	29.8	28.5
	Std. Dev.	6.06	4.90	5.64
	No.	(37)	(34)	(71)
Strongly disagree	$\bar{X}$	28.1	30.5	29.5
	Std. Dev.	6.34	4.97	5.68
	No.	(114)	(166)	(280)

Missing cases: 4

A one-way ANOVA showed a significant ($p < 0.001$) relationship between disagreement with this item and higher knowledge scores.

APPENDIX A

DIRECTIONS FOR ADMINISTERING INTERMEDIATE LEVEL NUTRITION SURVEY

1. Explain the purpose of the survey to your students:

"The Wisconsin Nutrition Education and Training Program is conducting a survey to find out what students know about foods and how the body uses foods. The information from this survey will help people in this program make plans about how to teach nutrition in the future.

The first part of the survey covers many different things a student might have learned about nutrition. You are not expected to know everything on this part. You will NOT be graded on your answers, but we want you to do the best that you can without spending too much time on any one question. The second part of the survey has some opinion statements. There are no correct answers to them. Please be sure to answer all of them.

So that you can find out how well you did on the first part of the survey, your teacher (or the person administering this survey) will be sent an answer key. Mark your booklet (or put your name on it and have the person administering the survey keep it for you) so that you can check your answers later.

Thank you for taking the time to answer this survey."

2. Distribute an answer sheet, background information sheet and survey booklet to each student.

3. Ask the students to turn to the back of the answer sheet. There they will find an example showing how to mark the answer sheet correctly. Please make certain that the students use a soft black lead pencil (pens do not work as well), that they do not make stray marks on the answer sheet, that they mark only ONE answer for each question, and that they DO NOT fold or crease it.

4. On the front of the answer sheet, have the students leave the sections for their Name and the Identification Number BLANK. Reiterate the fact that their answers are anonymous and will not be reported individually.

5. Have the students code the Special Codes section (letters A through J) on the front of the answer sheet, according to the instructions on the BACKGROUND INFORMATION sheet.

6. The survey should require no more than 20 to 30 minutes. Encourage slow students not to spend too much time on any one item. Make certain they respond to the opinion items in the second part of the survey.

7. Collect the answer sheets and return them along with the unused answer sheets to the principal or administrator who gave them to you.

8. THANK YOU! Your principal will be sent an answer key when the completed answer sheets are received.

APPENDIX B

BACKGROUND INFORMATION

SPECIAL CODES

CODE A

Mark

0 if you are MALE, 1 if you are FEMALE

CODE B

Mark	If You Had
0	No instruction about physical health and the human body this year or in previous years.
1	No instruction about physical health and the human body this year, but SOME in previous years.
2	SOME instruction about physical health and the human body this year, but NONE in previous years.
3	Some instruction THIS year AND in previous years about physical health and the human body.

CODE C

Mark	If You Had
0	No instruction about foods and how the body uses foods this year or in previous years.
1	No instruction about foods and how the body uses foods this year, but SOME in previous years.
2	SOME instruction about foods and how the body uses foods this year, but NONE in previous years.
3	Some instruction THIS year AND in previous years about foods and how the body uses foods.

CODE D

Mark	If you had a home economics course including instruction about foods and nutrition.
0	No such course this year or in previous years.
1	No such course this year, but one or more in previous years.
2	One or more such courses THIS year, but none in previous years.
3	One or more such courses THIS year AND in previous years.

APPENDIX C

INTERMEDIATE LEVEL NUTRITION SURVEY

Instructions: For each question choose the one best answer and fill in the corresponding circle on the answer sheet. If you don't know the answer, guess.

1. Which of these is not a nutrient?
   a. carbohydrate
   b. protein
   c. saccharine
   d. water

2. If a person doesn't get enough iron in his diet, she or he might develop:
   a. anemia
   b. diabetes
   c. pimples
   d. night blindness

3. A nutrient is:
   a. anything that can be absorbed by the body
   b. a substance needed for normal functioning of the body
   c. anything you eat or drink
   d. a substance found only in living cells

4. Most of the calcium in our bodies is in the:
   a. blood vessels
   b. bones
   c. fingernails and hair
   d. skin

5. In general, which are the best sources of vitamin C?
   a. fruits and vegetables
   b. whole grain breads and cereals
   c. milk and dairy products
   d. meat and meat substitutes

6. Which contains the most iron?
   a. bananas
   b. milk
   c. apples
   d. beef

7. To get the best protein combination, what should you eat with bread?
   a. peanut butter
   b. grape jelly
   c. butter
   d. oatmeal

"GO ON TO NEXT PAGE"

8. The amount of vitamin C you need each day can be provided by:
   a. one orange
   b. five oranges
   c. ten oranges
   d. you can never get enough of this nutrient

9. To get enough vitamin A you should:
   a. eat dark green or deep yellow vegetables 3 or 4 times weekly
   b. eat a potato every day
   c. eat some whole grain bread every day
   d. use honey instead of sugar

10. The best way to be sure you get all the nutrients you need is to:
   a. take a vitamin supplement every day
   b. drink lots of milk
   c. eat a wide variety of foods
   d. eat wheat germ every day

11. A Calorie is:
   a. a measure of food energy
   b. a kind of fat
   c. a measure of weight
   d. a chemical stimulant

12. Which has the most Calories?
   a. an ounce of sugar
   b. an ounce of margarine
   c. an ounce of meat
   d. an ounce of starch

13. Which of the following does <u>not</u> contain Calories?
   a. protein
   b. alcohol
   c. minerals
   d. carbohydrate

14. We get fatter when we:
   a. eat more Calories than we need
   b. eat too often
   c. eat potatoes and bread
   d. don't drink enough water

15. We use the most food energy per hour when we:
   a. play baseball
   b. run
   c. sleep
   d. study

16. When you are growing rapidly, your need for nutrients:
    a. is greater
    b. is less
    c. is the same as when you're not growing
    d. is determined by biorhythms

17. If there were no more oranges in the stores, what could we buy to give us just as much vitamin C without more Calories?
    a. tomatoes
    b. apples
    c. peaches
    d. carrots

18. When ingredients are shown on the label of a food, the one that's first on the list is:
    a. the most nutritious
    b. the most expensive
    c. the one that is in the food in the greatest amount
    d. the one that has the most protein

19. If you want to know about nutrition, the best person to ask is:
    a. a waitress
    b. a dietitian
    c. Dear Abby
    d. a clerk in a health foods store

20. Which of these snacks has the most nutrients for the least Calories?
    a. strawberries
    b. banana cake with cream cheese frosting
    c. apple pie
    d. blueberry ice cream

21. If you don't eat meat, you need to choose foods carefully because:
    a. vegetables are more expensive
    b. you must get the nutrients found in meat from other foods
    c. you can't live without meat in your diet
    d. you can't get enough dietary fiber without eating meat

22. If you have a hamburger on a bun and a glass of milk for lunch and the same thing for dinner, which foods should you eat more of for breakfast and snacks?
    a. fruits and vegetables
    b. breads and cereals
    c. milk and dairy products
    d. butter or margarine

"GO ON TO NEXT PAGE"

23. If you never drink milk or eat dairy products, what is most likely to happen?
    a. you won't get enough nutrients to keep your bones and teeth healthy
    b. you'll get canker sores
    c. you'll lose your hair
    d. you'll get iron-deficiency anemia

24. When eating at a fast food restaurant you should:
    a. try to include fruits or vegetables in your other meals
    b. drink coffee instead of Coke
    c. never eat potatoes and bread at the same meal
    d. make sure they serve butter instead of margarine

25. A person who frequently eats food with lots of sugar will probably get:
    a. tooth decay
    b. arthritis
    c. pimples
    d. cancer

26. People who are very fat often have problems with:
    a. double vision
    b. feeling unpopular or awkward
    c. stomach ulcer
    d. swollen glands

27. The cheapest food source of the mineral calcium is:
    a. ice cream
    b. milk
    c. Cheddar cheese
    d. cream cheese

28. Some people like to eat peanuts but don't like peanut butter. This is probably because:
    a. peanut butter is more expensive
    b. they don't like the way peanut butter feels in their mouth
    c. peanut butter doesn't have as much vitamin A as peanuts
    d. peanuts have less cholesterol than peanut butter

29. After an argument with her mother, Mary eats a dozen cookies. This indicates:
    a. fighting burns up a lot of calories
    b. Mary sometimes relieves her anger with food
    c. sugar makes people forget their problems
    d. Mary doesn't have enough carbohydrate in her diet

"GO ON TO NEXT PAGE"

30. A commercial that says, "Wouldn't you like to be a 'Pepper' too?":
    a. shows how nutritious the product is
    b. appeals to your desire to be part of a group
    c. tells you how the product tastes
    d. points out the low cost of the product

31. Agnes won't eat grapes when grape-pickers are on strike. This shows:
    a. Agnes doesn't like grapes
    b. Agnes is allergic to grapes
    c. politics can affect food choices
    d. grapes can cause cancer

32. The way to get the most protein from fertile land is to raise:
    a. soybeans
    b. beef cattle
    c. pigs
    d. spinach

33. People with malnutrition
    a. are always skinny
    b. all live in slums
    c. may be overweight or underweight
    d. usually have malaria

34. Which is the highest quality (most complete) protein?
    a. egg
    b. corn
    c. wheat
    d. lima beans

35. Fresh lettuce is available in Wisconsin all year because:
    a. refrigeration and modern transportation allow it to be brought in from areas with warmer winters
    b. it keeps for months in the refrigerator
    c. it has lots of vitamin D
    d. stores use chemicals to keep it from wilting

36. Preservatives are used in food to:
    a. keep food fresh longer
    b. disguise food that is spoiled
    c. kill insects that attack food as they grow
    d. make the food cook faster

37. Which nutrient is most easily destroyed by cooking?
    a. protein
    b. carbohydrate
    c. vitamin C
    d. calcium

"GO ON TO NEXT PAGE" 56

38. Which of the following is most likely to make food unsafe to eat?
    a. leaving egg salad in a warm room overnight
    b. picking cucumbers before they're ripe
    c. adding artificial colors to soda pop
    d. keeping bananas in the refrigerator

39. The process of breaking food down into chemicals that can be absorbed into the body is:
    a. digestion
    b. dialysis
    c. insulin
    d. peristalsis

40. You should throw away a bulging can of food because:
    a. it might be too acidic
    b. it might be spoiled and contain dangerous toxins
    c. it might explode
    d. it will smell funny

"GO ON TO PART TWO"

APPENDIX D
ANSWER KEY

State of Wisconsin **DEPARTMENT OF PUBLIC INSTRUCTION**

Barbara Thompson, Ph.D.
State Superintendent

Dwight M. Stevens, Ph.D.
Deputy State Superintendent

DIVISION FOR MANAGEMENT, PLANNING AND FEDERAL SERVICES
Archie A. Buchmiller, Ph.D., Assistant Superintendent

Dear Survey Participant:

Thank you for returning your answer sheets for the Nutrition Education and Training Program Student Knowledge and Opinion Survey. The answers to the sixth and tenth grade knowledge items are listed below.

1.	c	21.	b
2.	a	22.	a
3.	b	23.	a
4.	b	24.	a
5.	a	25.	a
6.	d	26.	b
7.	a	27.	b
8.	a	28.	b
9.	a	29.	b
10.	c	30.	b
11.	a	31.	c
12.	b	32.	a
13.	c	33.	c
14.	a	34.	a
15.	b	35.	a
16.	a	36.	a
17.	a	37.	c
18.	c	38.	a
19.	b	39.	a
20.	a	40.	b

Sincerely,

EDWARD J. POST, DIRECTOR
Food and Nutrition Services

Frank B. Evans

Frank B. Evans, Ed.D.
Nutrition Education
NET Program Evaluation Specialist

FBE/jem

58

125 South Webster Street, Madison, Wisconsin 53702

APPENDIX E
SIXTH GRADE OPINION ITEMS

PART TWO

The following items are about various nutrition-related topics. For each one, choose the statement that best expresses your opinion and fill in the corresponding circle on the answer sheet. There are no correct answers for these items.

41. I do not know enough about nutrition to choose foods wisely.
    a. strongly agree
    b. agree
    c. neutral
    d. disagree
    e. strongly disagree

42. I usually eat breakfast:
    a. less than once a week
    b. once or twice a week
    c. three or four times a week
    d. five or six times a week
    e. every day

43. Studying the nutritional value of foods is a waste of time.
    a. strongly agree
    b. agree
    c. neutral
    d. disagree
    e. strongly disagree

44. If I am careful about what I eat, I will probably be healthier.
    a. strongly agree
    b. agree
    c. neutral
    d. disagree
    e. strongly disagree

45. If an apple and a candy bar cost the same, I'd usually buy the apple.
    a. strongly agree
    b. agree
    c. neutral
    d. disagree
    e. strongly disagree

46. I would like to weigh:
    a. a lot more than I weigh now
    b. a few more pounds more than I weigh now
    c. about what I weigh now
    d. a few pounds less than I weigh now
    e. a lot less than I weigh now

- END -

APPENDIX F
TENTH GRADE OPINION ITEMS

PART TWO

The following items are about various nutrition-related topics. For each one, choose the statement that best expresses your opinion and fill in the corresponding circle on the answer sheet. There are no correct answers for these items.

41. I do not know enough about nutrition to choose foods wisely.
    a. strongly agree
    b. agree
    c. neutral
    d. disagree
    e. strongly disagree

42. I usually eat breakfast:
    a. less than once a week
    b. once or twice a week
    c. three or four times a week
    d. five or six times a week
    e. every day

43. Studying the nutritional value of foods is a waste of time.
    a. strongly agree
    b. agree
    c. neutral
    d. disagree
    e. strongly disagree

44. If I am careful about what I eat, I will probably be healthier.
    a. strongly agree
    b. agree
    c. neutral
    d. disagree
    e. strongly disagree

45. If an apple and a candy bar cost the same, I'd usually buy the apple.
    a. strongly agree
    b. agree
    c. neutral
    d. disagree
    e. strongly disagree

46. I would like to weigh:
    a. a lot more than I weigh now
    b. a few more pounds more than I weigh now
    c. about what I weigh now
    d. a few pounds less than I weigh now
    e. a lot less than I weigh now

"GO ON TO NEXT PAGE" 60

PART TWO (Continued)

47. To lose weight, I'd take diet pills instead of following a diet plan.

a. strongly agree
b. agree
c. neutral
d. disagree
e. strongly disagree

48. I try to eat foods that require little energy or resources to produce.

a. strongly agree
b. agree
c. neutral
d. disagree
e. strongly disagree

49. If I had to cook vegetables, I'd find out the best way to cook them to keep the vitamins.

a. strongly agree
b. agree
c. neutral
d. disagree
e. strongly disagree

50. A girl my age who's newly pregnant should choose her foods more to keep her figure than to nourish the baby.

a. strongly agree
b. agree
c. neutral
d. disagree
e. strongly disagree

- END -

APPENDIX G
ITEM STATISTICS FOR KNOWLEDGE TEST

1. Which of these is <u>not</u> a nutrient?

PROPORTION RESPONDING		POINT-BISERIAL CORRELATION		RESPONSE
Grade:		Grade:		
6th	10th	6th	10th	
.11	.04	-.13	-.13	a. carbohydrate
.02	.01	-.05	-.16	b. protein
.63	.63	.16	.23	*c. saccharine
.24	.32	-.07	-.15	d. water
.00	a	.00	-.02	e. (not used)
.00	a	.00	-.05	Blank or multiple response

a = less than .005 * = correct response

2. If a person doesn't get enough iron in his diet, she or he might develop:

PROPORTION RESPONDING		POINT-BISERIAL CORRELATION		RESPONSE
Grade:		Grade:		
6th	10th	6th	10th	
.49	.73	.27	.32	*a. anemia
.32	.12	-.16	-.26	b. diabetes
.09	.03	-.11	-.19	c. pimples
.11	.12	-.09	-.07	d. night blindness
.00	a	.00	-.02	e. (not used)
.00	.00	.00	.00	Blank or multiple response

a = less than .005 * = correct response

3. A nutrient is:

PROPORTION RESPONDING		POINT-BISERIAL CORRELATION		RESPONSE
Grade:		Grade:		
6th	10th	6th	10th	
.06	.08	-.19	-.02	a. anything that can be absorbed by the body
.77	.79	.43	.30	*b. a substance needed for normal functioning of the body
.08	.03	-.25	-.33	c. anything you eat or drink
.08	.09	-.22	-.22	d. a substance found only in living cells
.00	a	.00	-.02	e. (not used)
a	a	-.12	.06	Blank or multiple response

a = less than .005 * = correct response

4. Most of the calcium in our bodies is in the:

PROPORTION RESPONDING		POINT-BISERIAL CORRELATION		RESPONSE
Grade:		Grade:		
6th	10th	6th	10th	
.16	.04	-.33	-.28	a. blood vessels
.69	.89	.39	.46	*b. bones
.08	.04	-.05	-.29	c. fingernails and hair
.07	.02	-.16	-.16	d. skin
a	.00	-.15	.00	e. (not used)
.00	a	.00	-.14	Blank or multiple response

a = less than .005 * = correct response

5. In general, which are the best sources of vitamin C?

PROPORTION RESPONDING		POINT-BISERIAL CORRELATION		RESPONSE
Grade:		Grade:		
6th	10th	6th	10th	
.77	.89	.48	.40	*a. fruits and vegetables
.07	.02	-.28	-.28	b. whole grain breads and cereals
.13	.08	-.35	-.26	c. milk and dairy products
.02	.01	-.06	-.19	d. meat and meat substitutes
.00	.00	.00	.00	e. (not used)
a	a	-.05	.04	Blank or multiple response

a = less than .005 * = correct response

6. Which contains the most iron?

PROPORTION RESPONDING		POINT-BISERIAL CORRELATION		RESPONSE
Grade:		Grade:		
6th	10th	6th	10th	
.06	.08	-.03	-.14	a. bananas
.32	.19	-.21	-.15	b. milk
.11	.04	-.07	-.17	c. apples
.51	.68	.26	.28	*d. beef
a	a	-.01	.02	e. (not used)
.00	.00	.00	.00	Blank or multiple response

a = less than .005 * = correct response

7. To get the best protein combination, what should you eat with bread?

PROPORTION RESPONDING		POINT-BISERIAL CORRELATION		RESPONSE
Grade:		Grade:		
6th	10th	6th	10th	
.64	.83	.36	.49	*a. peanut butter
.04	.02	-.07	-.29	b. grape jelly
.21	.09	-.19	-.32	c. butter
.11	.05	-.22	-.21	d. oatmeal
a	.00	-.18	.00	e. (not used)
a	.00	-.12	.00	Blank or multiple response

a = less than .005 * = correct response

8. The amount of vitamin C you need each day can be provided by:

PROPORTION RESPONDING		POINT-BISERIAL CORRELATION		RESPONSE
Grade:		Grade:		
6th	10th	6th	10th	
.56	.59	.18	.18	*a. one orange
.17	.16	-.08	-.03	b. five oranges
.04	.04	-.14	-.18	c. ten oranges
.23	.21	-.08	-.10	d. you can never get enough of this nutrient
a	.00	.01	.00	e. (not used)
.00	.00	.00	.00	Blank or multiple response

a = less than .005 * = correct response

9. To get enough vitamin A you should:

PROPORTION RESPONDING		POINT-BISERIAL CORRELATION		RESPONSE
Grade:		Grade:		
6th	10th	6th	10th	
.39	.56	.21	.32	*a. eat dark green or deep yellow vegetables 3 or 4 times weekly
.11	.11	-.04	-.11	b. eat a potato every day
.43	.28	-.12	-.15	c. eat some whole grain bread every day
.07	.04	-.12	-.22	d. use honey instead of sugar
.00	a	.00	-.10	e. (not used)
.00	a	.00	-.06	Blank or multiple response

a = less than .005 * = correct response

10. The best way to be sure you get all the nutrients you need is to:

PROPORTION RESPONDING		POINT-BISERIAL CORRELATION		RESPONSE
Grade:		Grade:		
6th	10th	6th	10th	
.36	.33	-.17	-.07	a. take a vitamin supplement every day
.09	.05	-.27	-.37	b. drink lots of milk
.53	.59	.34	.32	*c. eat a wide variety of foods
.01	.03	-.05	-.23	d. eat wheat germ every day
.00	a	.00	-.11	e. (not used)
.00	.00	.00	.00	Blank or multiple response

a = less than .005 * = correct response

11. A Calorie is:

PROPORTION RESPONDING		POINT-BISERIAL CORRELATION		RESPONSE
Grade:		Grade:		
6th	10th	6th	10th	
.39	.75	.30	.46	*a. a measure of food energy
.39	.12	-.14	-.23	b. a kind of fat
.17	.09	-.12	-.25	c. a measure of weight
.05	.04	-.16	-.25	d. a chemical stimulant
.00	.00	.00	.00	e. (not used)
a	a	.01	-.14	Blank or multiple response

a = less than .005 * = correct response

12. Which has the most Calories?

PROPORTION RESPONDING		POINT-BISERIAL CORRELATION		RESPONSE
Grade:		Grade:		
6th	10th	6th	10th	
.55	.54	.10	.11	a. an ounce of sugar
.22	.17	.07	-.03	*b. an ounce of margarine
.05	.06	-.12	-.20	c. an ounce of meat
.18	.23	-.12	.01	d. an ounce of starch
a	.00	-.14	.00	e. (not used)
.00	.00	.00	.00	Blank or multiple response

a = less than .005 * = correct response

13. Which of the following does not contain Calories?

PROPORTION RESPONDING		POINT-BISERIAL CORRELATION		RESPONSE
Grade:		Grade:		
6th	10th	6th	10th	
.20	.13	-.13	-.15	a. protein
.27	.14	-.12	-.25	b. alcohol
.35	.59	.32	.44	*c. minerals
.18	.14	-.12	-.20	d. carbohydrate
.00	a	.00	-.06	e. (not used)
a	a	.03	-.14	Blank or multiple response

a = less than .005 * = correct response

14. We get fatter when we:

PROPORTION RESPONDING		POINT-BISERIAL CORRELATION		RESPONSE
Grade:		Grade:		
6th	10th	6th	10th	
.66	.84	.24	.50	*a. eat more Calories than we need
28	.12	-.13	-.36	b. eat too often
.03	.02	-.14	-.26	c. eat potatoes and bread
.02	.01	-.17	-.22	d. don't drink enough water
a	.00	-.14	.00	e. (not used)
.00	.00	.00	.00	Blank or multiple response

a = less than .005 * = correct response

15. We use the most food energy per hour when we:

PROPORTION RESPONDING		POINT-BISERIAL CORRELATION		RESPONSE
Grade:		Grade:		
6th	10th	6th	10th	
.14	.13	.03	-.10	a. play baseball
.67	.75	.19	.33	*b. run
.17	.10	-.21	-.31	c. sleep
.02	.02	-.10	-.12	d. study
a	.00	-.14	.00	e. (not used)
.00	.00	.00	.00	Blank or multiple response

a = less than .005 * = correct response

16. When you are growing rapidly, your need for nutrients:

PROPORTION RESPONDING		POINT-BISERIAL CORRELATION		RESPONSE
Grade:		Grade:		
6th	10th	6th	10th	
.77	.88	.51	.49	*a. is greater
.09	.03	-.30	-.25	b. is less
.07	.07	-.28	-.28	c. is the same as when you're not growing
.06	.03	-.20	-.30	d. is determined by biorythms
a	.00	-.08	.00	e. (not used)
a	.00	-.12	.00	Blank or multiple response

a = less than .005 * = correct response

17. If there were no more oranges in the stores, what could we buy to give us just as much vitamin C without more Calories?

PROPORTION RESPONDING		POINT-BISERIAL CORRELATION		RESPONSE
Grade:		Grade:		
6th	10th	6th	10th	
.13	.30	.11	.29	*a. tomatoes
.40	.26	-.11	-.09	b. apples
.23	.29	.09	-.06	c. peaches
.23	.14	-.02	-.19	d. carrots
a	.00	-.13	.00	e. (not used)
a	a	-.06	.04	Blank or multiple response

a = less than .005 * = correct response

18. When ingredients are shown on the label of a food, the one that's first on the list is:

PROPORTION RESPONDING		POINT-BISERIAL CORRELATION		RESPONSE
Grade:		Grade:		
6th	10th	6th	10th	
.24	.15	-.15	-.14	a. the most nutritious
.04	.06	-.17	-.43	b. the most expensive
.51	.68	.38	.49	*c. the one that is in the food in the greatest amount
.21	.11	-.23	-.23	d. the one that has the most protein
.00	.00	.00	.00	e. (not used)
.00	a	.00	-.06	Blank or multiple response

a = less than .005 * = correct response

19. If you want to know about nutrition, the best person to ask is:

PROPORTION RESPONDING		POINT-BISERIAL CORRELATION		RESPONSE
Grade:		Grade:		
6th	10th	6th	10th	
.02	.02	-.12	-.19	a. a waitress
.59	.77	.29	.49	*b. a dietitian
.04	.05	-.28	-.41	c. Dear Abby
.35	.16	-.14	-.24	d. a clerk in a health foods store
a	a	-.14	-.10	e. (not used)
.00	.00	.00	.00	Blank or multiple response

a = less than .005 * = correct response

20. Which of these snacks has the most nutrients for the least Calories?

PROPORTION RESPONDING		POINT-BISERIAL CORRELATION		RESPONSE
Grade:		Grade:		
6th	10th	6th	10th	
.74	.76	.43	.52	*a. strawberries
.07	.09	-.16	-.39	b. banana cake with cream cheese frosting
.13	.08	-.23	-.16	c. apple pie
.05	.07	-.24	-.27	d. blueberry ice cream
a	.00	-.18	.00	e. (not used)
a	.00	-.08	.00	Blank or multiple response

a = less than .005 * = correct response

21. If you don't eat meat, you need to choose foods carefully because:

PROPORTION RESPONDING		POINT-BISERIAL CORRELATION		RESPONSE
Grade:		Grade:		
6th	10th	6th	10th	
.03	.04	-.24	-.40	a. vegetables are more expensive
.74	.87	.40	.59	*b. you must get the nutrients found in meat from other foods
.07	.03	-.20	-.33	c. you can't live without meat in your diet
.15	.05	-.18	-.24	d. you can't get enough dietary fiber without eating meat
a	.00	-.09	.00	e. (not used)
a	a	-.15	-.10	Blank or multiple response

a = less than .005 * = correct response

22. If you have a hamburger on a bun and a glass of milk for lunch and the same thing for dinner, which foods should you eat more of for breakfast and snacks?

PROPORTION RESPONDING		POINT-BISERIAL CORRELATION		RESPONSE
Grade:		Grade:		
6th	10th	6th	10th	
.79	.84	.49	.53	*a. fruits and vegetables
.11	.06	-.24	-.28	b. breads and cereals
.08	.07	-.34	-.35	c. milk and dairy products
.02	.02	-.17	-.26	d. butter or margarine
.00	.00	.00	.00	e. (not used)
a	.00	-.15	.00	Blank or multiple response

a = less than .005 * = correct response

23. If you never drink milk or eat dairy products, what is most likely to happen?

PROPORTION RESPONDING		POINT-BISERIAL CORRELATION		RESPONSE
Grade:		Grade:		
6th	10th	6th	10th	
.80	.87	.42	.49	*a. you won't get enough nutrients to keep your bones and teeth healthy
.03	.03	-.27	-.22	b. you'll get canker sores
.04	.03	-.28	-.42	c. you'll lose your hair
.12	.06	-.15	-.21	d. you'll get iron-deficiency anemia
.00	.00	.00	.00	e. (not used)
.01	.00	-.20	.00	Blank or multiple response

a = less than .005 * = correct response

24. When eating at a fast food restaurant you should:

PROPORTION RESPONDING		POINT-BISERIAL CORRELATION		RESPONSE
Grade:		Grade:		
6th	10th	6th	10th	
.85	.90	.47	.58	*a. try to include fruits or vegetables in your other meals
.04	.02	-.21	-.31	b. drink coffee instead of Coke
.05	.05	-.32	-.42	c. never eat potatoes and bread at the same meal
.05	.02	-.17	-.20	d. make sure they serve butter instead of margarine
a	a	-.11	-.09	e. (not used)
.01	.00	-.17	.00	Blank or multiple response

a = less than .005 * = correct response

25. A person who frequently eats food with lots of sugar will probably get:

PROPORTION RESPONDING		POINT-BISERIAL CORRELATION		RESPONSE
Grade:		Grade:		
6th	10th	6th	10th	
.67	.83	.33	.51	*a. tooth decay
.05	.04	-.13	-.34	b. arthritis
.13	.07	-.15	-.22	c. pimples
.14	.06	-.19	-.29	d. cancer
.00	.00	.00	.00	e. (not used)
a	.00	-.16	.00	Blank or multiple response

a = less than .005 * = correct response

26. People who are very fat often have problems with:

PROPORTION RESPONDING		POINT-BISERIAL CORRELATION		RESPONSE
Grade:		Grade:		
6th	10th	6th	10th	
.04	.03	-.25	-.30	a. double vision
.42	.56	.27	.30	*b. feeling unpopular or awkward
.40	.26	-.06	-.08	c. stomach ulcer
.13	.16	-.11	-.18	d. swollen glands
.00	a	.00	-.10	e. (not used)
.01	.00	-.16	.00	Blank or multiple response

a = less than .005 * = correct response

27. The cheapest food source of the mineral calcium is:

PROPORTION RESPONDING		POINT-BISERIAL CORRELATION		RESPONSE
Grade:		Grade:		
6th	10th	6th	10th	
.15	.13	-.12	-.24	a. ice cream
.43	.66	.20	.40	*b. milk
.17	.11	-.02	-.15	c. Cheddar cheese
.23	.10	-.07	-.17	d. cream cheese
a	a	-.14	-.12	e. (not used)
a	.00	-.16	.00	Blank or multiple response

a = less than .005 * = correct response

28. Some people like to eat peanuts but don't like peanut butter. This is probably because:

PROPORTION RESPONDING		POINT-BISERIAL CORRELATION		RESPONSE
Grade:		Grade:		
6th	10th	6th	10th	
.07	.04	-.15	-.05	a. peanut butter is more expensive
.20	.38	.18	.29	*b. they don't like the way peanut butter feels in their mouth
.18	.12	-.13	-.26	c. peanut butter doesn't have as much vitamin A as peanuts
.54	.46	.05	-.07	d. peanuts have less cholesterol than peanut butter
a	a	-.07	-.15	e. (not used)
a	a	-.16	.01	Blank or multiple response

a = less than .005 * = correct response

29. After an argument with her mother, Mary eats a dozen cookies. This indicates:

PROPORTION RESPONDING		POINT-BISERIAL CORRELATION		RESPONSE
Grade:		Grade:		
6th	10th	6th	10th	
.14	.10	-.13	-.21	a. fighting burns up a lot of calories
.66	.80	.36	.43	*b. Mary sometimes relieves her anger with food
.09	.05	-.23	-.36	c. sugar makes people forget their problems
.09	.04	-.14	-.15	d. Mary doesn't have enough carbohydrate in her diet
a	.00	-.08	.00	e. (not used)
a	.00	-.16	.00	Blank or multiple response

a = less than .005 * = correct response

30. A commercial that says, "Wouldn't you like to be a 'Pepper' too?":

PROPORTION RESPONDING		POINT-BISERIAL CORRELATION		RESPONSE
Grade:		Grade:		
6th	10th	6th	10th	
.08	.05	-.23	-.34	a. shows how nutritious the product is
.66	.87	.44	.52	*b. appeals to your desire to be part of a group
.23	.07	-.24	-.29	c. tells you how the product tastes
.03	.01	-.18	-.23	d. points out the low cost of the product
a	.00	-.14	.00	e. (not used)
a	.00	-.16	.00	Blank or multiple response

a = less than .005 * = correct response

31. Agnes won't eat grapes when grape-pickers are on strike. This shows:

PROPORTION RESPONDING		POINT-BISERIAL CORRELATION		RESPONSE
Grade:		Grade:		
6th	10th	6th	10th	
.07	.06	-.21	-.29	a. Agnes doesn't like grapes
.07	.03	-.35	-.31	b. Agnes is allergic to grapes
.83	.88	.49	.50	*c. politics can affect food choices
.03	.02	-.20	-.28	d. grapes can cause cancer
a	a	.03	.01	e. (not used)
a	a	-.16	.04	Blank or multiple response

a = less than .005 * = correct response

32. The way to get the most protein from fertile land is to raise:

PROPORTION RESPONDING		POINT-BISERIAL CORRELATION		RESPONSE
Grade:		Grade:		
6th	10th	6th	10th	
.29	.49	.20	.32	*a. soybeans
.26	.21	.03	-.11	b. beef cattle
.07	.06	-.25	-.27	c. pigs
.38	.24	-.07	-.10	d. spinach
a	a	-.08	-.11	e. (not used)
a	a	-.05	-.06	Blank or multiple response

a = less than .005 * = correct response

33. People with malnutrition

PROPORTION RESPONDING		POINT-BISERIAL CORRELATION		RESPONSE
Grade:		Grade:		
6th	10th	6th	10th	
.30	.26	-.06	-.24	a. are always skinny
.06	.04	-.22	-.32	b. all live in slums
.46	.62	.22	.45	*c. may be overweight or underweight
.17	.07	-.05	-.19	d. usually have malaria
a	a	-.08	-.08	e. (not used)
a	a	-.08	.03	Blank or multiple response

a = less than .005 * = correct response

34. Which is the highest quality (most complete) protein?

PROPORTION RESPONDING		POINT-BISERIAL CORRELATION		RESPONSE
Grade:		Grade:		
6th	10th	6th	10th	
.48	.54	.35	.27	*a. egg
.12	.08	-.15	-.23	b. corn
.29	.23	-.17	-.17	c. wheat
.10	.14	-.12	.02	d. lima beans
a	a	-.13	-.14	e. (not used)
a	.00	-.08	.00	Blank or multiple response

a = less than .005 * = correct response

35. Fresh lettuce is available in Wisconsin all year because:

PROPORTION RESPONDING		POINT-BISERIAL CORRELATION		RESPONSE
Grade:		Grade:		
6th	10th	6th	10th	
.51	.74	.42	.52	*a. refrigeration and modern transportation allow it to be brought in from areas with warmer winters
.14	.09	-.14	-.24	b. it keeps for months in the refrigerator
.22	.09	-.31	-.26	c. it has lots of vitamin D
.12	.08	-.07	-.29	d. stores use chemicals to keep it from wilting
a	a	-.08	-.05	e. (not used)
a	a	-.08	-.10	Blank or multiple response

a = less than .005 * = correct response

36. Preservatives are used in food to:

PROPORTION RESPONDING		POINT-BISERIAL CORRELATION		RESPONSE
Grade:		Grade:		
6th	10th	6th	10th	
.77	.85	.50	.68	*a. keep food fresh longer
.09	.06	-.26	-.33	b. disguise food that is spoiled
.07	.05	-.30	-.38	c. kill insects that attach food as they grow
.07	.05	-.19	-.40	d. make the food cook faster
a	.00	-.15	.00	e. (not used)
a	.00	-.08	.00	Blank or multiple response

a = less than .005 * = correct response

37. Which nutrient is most easily destroyed by cooking?

PROPORTION RESPONDING		POINT-BISERIAL CORRELATION		RESPONSE
Grade:		Grade:		
6th	10th	6th	10th	
.21	.22	-.04	-.03	a. protein
.23	.25	-.09	-.16	b. carbohydrate
.32	.41	.21	.27	*c. vitamin C
.23	.13	-.07	-.15	d. calcium
a	.00	-.11	.00	e. (not used)
a	a	-.16	-.02	Blank or multiple response

a = less than .005 * = correct response

38. Which of the following is most likely to make food unsafe to eat?

PROPORTION RESPONDING		POINT-BISERIAL CORRELATION		RESPONSE
Grade:		Grade:		
6th	10th	6th	10th	
.52	.77	.40	.48	*a. leaving egg salad in a warm room overnight
.25	.07	-.23	-.25	b. picking cucumbers before they're ripe
.16	.12	-.18	-.30	c. adding artif[illegible]ors to soda pop
.05	.04	-.10	-.21	d. keeping bananas in the refrigerator
.00	.00	.00	.00	e. (not used)
.02	.00	-.09	.00	Blank or multiple response

a = less than .005 * = correct response

39. The process of breaking food down into chemicals that can be absorbed into the body is:

PROPORTION RESPONDING		POINT-BISERIAL CORRELATION		RESPONSE
Grade:		Grade:		
6th	10th	6th	10th	
.70	.83	.47	.56	*a. digestion
.10	.08	-.33	-.29	b. dialysis
.09	.04	-.13	-.38	c. insulin
.08	.05	-.20	-.26	d. peristalsis
.01	.00	-.07	.00	e. (not used)
.02	.00	-.13	.00	Blank or multiple response

a = less than .005 * = correct response

40. You should throw away a bulging can of food because:

PROPORTION RESPONDING		POINT-BISERIAL CORRELATION		RESPONSE
Grade:		Grade:		
6th	10th	6th	10th	
.14	.09	-.04	-.21	a. it might be too acidic
.61	.73	.30	.40	*b. it might be spoiled and contain dangerous toxins
.16	.12	-.08	-.20	c. it might explode
.07	.05	-.30	-.23	d. it will smell funny
.01	.00	-.13	.00	e. (not used)
.02	a	-.11	.04	Blank or multiple response

a = less than .005 * = correct response